Yangon University of Economics
Post Graduate Diploma in Research Studies (PGDRS) Progamme
First Quarter Examination, September 2023

PGDRS-111

PGDRS (9th Batch) **Data Structure and Data Collection Methods**

Answer **All** Questions. **Time Allowed: 3 hours**

1. (a) Which kind of sampling technique is used in each of the following situations?
    - (i) A teacher obtains a sample of 150 students by randomly selecting 75 students each from boys and girls.
    - (ii) A sample is to take every 20th person coming out of the class.
    - (iii) A construction company selected 80 employees using random number table.
    - (iv) There are 5 hostels in a large university campus. A researcher selected 2 hostels at random and interviewed all the students in these selected hostels.

   (b) All employees of the company are listed in alphabetical order. You choose number 8 as your starting point at random from the first 20 numbers. Every tenth individual on the list is chosen starting at number 8 until you have a sample of 25 employees. Determine the population size and the sample numbers that should be included in the sample size.

   (c) A survey is conducted by a group of students to study the demographic characteristics of dropouts of a university. There are 600 dropouts from the university and a sample of 100 is chosen as respondents.
    - (i) What is the sampling frame for this survey?
    - (ii) Identify a possible probability sampling technique to select 100 dropouts from the dropout list. Describe the sample numbers you select.

2. (a) Why do you need to choose the sample? What is required for determining the sample size?

   (b) If the variance of the water temperature in a lake is 28°, how many days should the researcher select to measure the temperature to estimate the true mean within 4° with 95% confidence?

   (c) A researcher wishes to be 95% confident that her estimate of the true proportion of individuals who travel overseas is within 4% of the true proportion. Find the sample necessary if, in a prior study, a sample of 200 people showed that 40 traveled overseas last year. If no estimate of the sample proportion is available, how large should the sample be?

3. The following data gave the results of a study that followed 50 heart patients who had received electronic pacemakers. The time (in months) to the first electrical malfunction of the pacemaker was recorded.

12	20	16	22	14	22	2	12	6	14
10	20	8	16	12	16	14	20	18	10
16	18	20	22	6	12	18	18	14	10
14	16	18	2	18	12	12	18	20	22
20	16	20	6	14	18	18	16	20	6

   - (i) Summarize this data in the form of a frequency distribution, using class intervals of 1 to 5, 6 to 10, 11 to 15 and so on.
   - (ii) Compute the relative frequencies and less than cumulative frequencies.
   - (iii) Draw an appropriate graph.

4. (a) A questionnaire on housing arrangements showed this information obtained from 25 respondents. Construct a frequency distribution for the data (H = house, A = apartment, M = mobile home, C = condominium).

H	C	H	M	H	A	C	A	M	C
M	C	A	M	A	C	A	M	C	C
H	A	H	H	M	C	A	A	H	M
H	H	C	M	C	H	A	A	A	C

(i) Construct a frequency distribution. How many percent of respondents lived in condominium?

(ii) Draw a pie chart and analyze your results.

(iii)Which are the most and the least housing arrangements of the respondents?

(b) The following data are the published weights (in pounds) of all the team members of the Myanmar in last year.

177	205	210	210	232	205	185	185	178	210	206	212
184	174	185	242	188	212	215	247	241	223	220	260
245	259	278	270	280	295	275	285	290	272	273	280
285	286	200	215	185	230	250	241	190	260	250	302

Construct and interpret a stem and leaf plot for the data.

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